



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
-----------------	-------------	----------------------	---------------------	------------------

10/583,607

06/20/2006

Jun Nishikawa

09812.0098

2625

22852

7590

11/09/2009

FINNEGAN, HENDERSON, FARABOW, GARRETT & DUNNER
LLP

901 NEW YORK AVENUE, NW
WASHINGTON, DC 20001-4413

EXAMINER

JOHNSTON, PHILLIP A

ART UNIT

PAPER NUMBER

2881

MAIL DATE

DELIVERY MODE

11/09/2009

PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/583,607	Applicant(s) NISHIKAWA ET AL.	
	Examiner PHILLIP A. JOHNSTON	Art Unit 2881	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 27 July 2009.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 14-20 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 14-20 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 20 June 2006 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

Detailed Action

1. This Office Action is submitted in response to the amendment filed 7-27-2009, wherein claims 14-20 are pending.

Response to Arguments

2. Applicant's arguments filed 7-27-2009 have been fully considered but they are not persuasive.

3. The Applicant argues at page 9 of the remarks that, Accordingly, Davis at best discloses that the second set of lenses 34c form an intermediate image. Davis does not disclose that the first set of lenses 34a form an image before a light beam reaches mirror 34b. The light beam crossings marked in Figure 3 of Davis do not constitute an image. Accordingly, lenses 34c cannot reasonably correspond to the claimed first optical system. For at least these reasons, Davis fails to teach or suggest, "a first optical system that forms an intermediate image of the primary image surface; and a second optical system having a concave reflector that forms the secondary image surface according to the intermediate image," as recited in claim 14. Therefore, claim 14 is distinguishable over Davis.

The examiner disagrees.

In response to applicant's argument that: "Davis does not disclose that the first set of lenses form an image before a light beam reaches the mirror"; however this feature or limitation is not recited in rejected claim 14. No mention is made as to the

location of the intermediate image nor locations of light beam crossings, only that, the first optical system forms an intermediate image of the primary image surface, which Davis discloses as the image of SLM 33 (the primary image surface) formed at the intermediate image plane of lenses 34a as shown in Figure 3 and Col. 4, line 16-33.

Although the claims are interpreted in light of the specification, limitations from the specification are not read into the claims. See *In re Van Geuns*, 988 F.2d 1181, 26 USPQ2d 1057 (Fed Cir 1993).

4. The rejection of claims 14-20 are maintained.
5. All claims stand finally rejected.

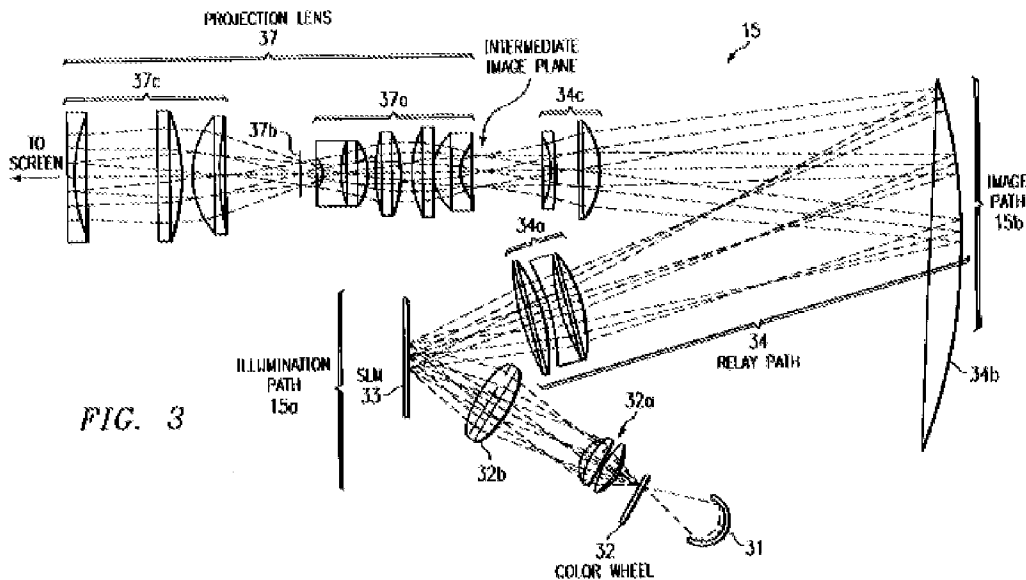
Claims Rejection - 35 U.S. C. 102

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

3. Claim 14 is rejected under 35 U.S.C. 102 (b) as being anticipated by Davis, U. S. Patent No. 6,619, 804.

4. Regarding claim 14, Davis discloses at Col. 3, line 38-67; and Col. 4, line 1-33; the projection display apparatus shown below in Figure 3 that includes the following;



(a) Light source 31,

(b) Modulator SLM 33 that modulates the light source based on digitized video signals. See Col. 3, line 22-37

(c) A first optical system that includes the optical elements on Illumination path 15a and Relay path 34, where an image of SLM 33 (the primary image surface) is formed at the intermediate image plane of lenses 34a as shown in Figure 3 above. Col. 4, line 16-33,

(d) A second optical system that includes optical elements on Image path 15b, which includes concave mirror 34b and Projection optics 37 that creates an image on the display system screen. Col. 4, line 16-33,

(e) An optical path represented by the three ray bundles shown in Figure 3 above, which reflect from the center and extremities of modulator SLM 33 (the primary imaging surface Col. 1, line 27-43), where the light first crosses the optical axis in light path 34 then reflects off the concave mirror 34b and crosses the optical axis again at the intermediate image plane then travels through the projection optics to the screen (the secondary image surface).

Claims Rejection – 35 U.S.C. 103

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which the subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

6. Claims 14, and 16-20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hiller, USPN, 6,233,024, in view of Davis, 6,619,804, and in further view of Cotton, USPN 6719,430.

7. Regarding claim 14, Hiller teaches a video projection system at Col. 7, line 10-63 and shown in Figure 1 below including projection assembly 1 that contains a light source; optics and a modulator for scanning a light bundle in two dimensions off a plane mirror 3 to a screen 2.

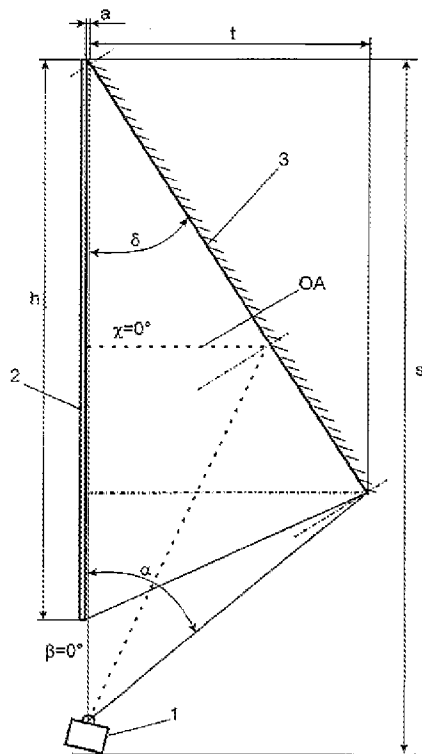


Fig. 1

8. Hiller fails to teach a projection optical system for enlarged projection from a primary image surface toward the modulation means to a secondary image surface toward a screen, wherein the projection optical system includes: a first optical system that forms an intermediate image of the primary image surface; and a second optical system having a concave reflector that forms the secondary image surface according to the intermediate image, wherein a light beam travels from the center of the primary image surface to the center of the secondary image surface, crosses an optical axis of the first optical system, reflects on the concave reflector, crosses the optical axis again, and reaches the secondary image surface.

Davis discloses a projection display apparatus shown above in Figure 3 that includes the following;

(a) A first optical system that includes the optical elements on Illumination path 15a and Relay path 34,

(b) A second optical system that includes optical elements on Image path 15b and Projection optics 37,

(c) An optical path represented by the three ray bundles shown in Figure 3 above, which reflect from the center and extremities of modulator SLM 33 (the primary imaging surface Col. 1, line 27-43), where the light first crosses the optical axis in light path 34 then reflects off the concave mirror 34b and crosses the optical axis again at the intermediate image plane then travels through the projection optics to the screen (the secondary image surface). See Col. 3, line 38-67; and Col. 4, line 1-33.

Davis modifies Hiller to provide an optical engine that provides for a high contrast, telecentric, on-axis image by a relay path between the modulator and the projection lens, where the relay path places the image at an intermediate image plane accessible by a projection lens.

Hiller teaches a cabinet containing a large mirror for deflecting an image onto the screen mounted at the front of the cabinet from a projector mounted at the rear of the cabinet. See Abstract.

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made that Hiller would use the optical engine of Davis to provide a modulation based projection optical apparatus that combines characteristics

of both telecentric and non-telecentric designs in order to provide a display having optimum contrast. Col. 2, line 24-31.

9. Regarding claims 16 and 17, Hiller discloses at Col. 7, line 10-35; and line 55-63 a screen disposed in a housing or cabinet as shown in Figure 1 above having a video picture reflected onto the back of the screen from a plane mirror at the top of the cabinet via an optical system located at the bottom of the cabinet, where the viewer is located in front of the screen, which one of ordinary skill recognizes would require a transmissive screen.

10. Regarding claims 18 and 19, Hiller discloses at col. 4, line; and col. 5, line 1-4, a screen and a Fresnel lens whose object-side focal point is imaged in the exit pupil of the magnification optics or of the deflecting device and whose Fresnel structure lies on the light entrance side considered in the direction of light, followed by a disk for vertical and horizontal scattering.

11. Regarding claim 20, Hiller discloses at Col. 5, line 5-23, a plane reflector positioned immediately before the screen and optimizing the projected image with respect to the size of the cabinet by varying the angle δ between the screen and the plane reflector while varying the deflection angle α between the screen and light beam furthest from (outmost) the screen, which one of ordinary skill recognizes that the angular relationship of Hiller would include the claimed angular range for the tangent of angle α .

12. Claim 15 is rejected under 35 U.S.C. 103(a) as being unpatentable over Hiller, USPN, 6,233,024, in view of Davis, 6,619,804, and in further view of Cotton, USPN 6,719,430.

13. Regarding claim 15, the combination of Hiller and Davis discloses all limitations of claim 15, as described above regarding claim 14, but fails to disclose first and second optical systems having rotationally symmetric optical surfaces.

Cotton discloses the use of substantially rotationally symmetric lens groups in a projection display apparatus. Col. 8, line 46-50.

Cotton modifies the combination of Hiller and Davis to provide rotationally symmetric optical elements for the correction of optical aberrations in a projection system while maintaining the ability to produce an image on a tilted image plane that is corrected for anamorphic distortion.

Hiller teaches a rear projector optical system where the optical path is folded via a large mirror in order to provide a video projector that has a small housing depth. Col. 1, line 30-35.

Therefore it would have been obvious to one of ordinary skill in the art that the combination of Hiller and Davis would use the rotationally symmetric optical surfaces of Cotton, in order to spread out the optical power of the cylindrical elements thereby providing an optical system having a reduced optical path that produces an accurate image on a screen, which does not suffer from improperly focused images and image distortions. Col. 2, line 28-36.

Conclusion

7. The Amendment filed on 7-27-2009 has been considered but is ineffective to overcome the references cited in the Office Action mailed 4-28-2009.

THIS ACTION IS MADE FINAL. Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

8. Any inquiry concerning this communication or earlier communications should be directed to Phillip Johnston whose telephone number is (571) 272-2475. The examiner can normally be reached on Monday-Friday from 7:00 am to 4:00 pm. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor Robert Kim can be reached at (571) 272-2293. The fax phone number for the organization where the application or proceeding is assigned is 571 273 8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR.

Status information for unpublished applications is available through Private PAIR only.

For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

PJ
November 2, 2009

/ROBERT KIM/

Supervisory Patent Examiner, Art Unit 2881